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THE FACULTY DOCTRINE, CORRELATION, AND EDUCATIONAL THEORY.[1] I

I. INTRODUCTION

AT a meeting of teachers in London recently, a prominent educationist expressed some dismay at the growing influence of psychology in education. For he said that he understood that psychologists, nowadays, had deprived us of our faculties. Personally, he felt that he could not do without his, and he thought that teachers would find it very hard to discuss and apply educational theory if they were no longer able to use such terms as memory, imagination, reasoning, *et id omne genus*, without being open to the charge that they were speaking of non-existent entities.

Let us at the very outset admit that "faculties" are explanations and are not necessarily causes. A fact is explained when we are able to join it up with similar facts in a common judgment. Such an explanation is not ultimate—probably no scientific explanations are—but it may have a pragmatic value; it may help us to handle the multitudinous happenings of our real world more economically; it may help us to draw conclusions of service for practise. We *must* conceptualize if we are to draw conclusions which in any way pass beyond the bare facts revealed by observation and experiment. Unrationalized perception leads nowhere. But, on the contrary, conceptions, to be valuable, must be full of the possibilities of perceptual content; they must start from facts and point the way to new ones.

We must, I think, further admit that the conceptualizing of early psychology was a process too easily carried out; and, in the first break-up of its merely classificatory doctrines, it was inevitable that the easy solutions of the past should be discountenanced and vigorously denied. It was inevitable that the increasing knowledge of the

[1] This paper was given in outline before the joint meeting of the Aristotelian Society, the Mind Association, and the British Psychological Society in London, 1910.

extreme complexity of mind should lead to a disbelief in the few simple unities which heretofore had largely done duty for accurate psychologic thinking. The reaction was largely for good, and we owe to it the development of latter-day scientific psychology.

Analysis is the keynote of modern work; but one can not draw useful conclusions from merely analyzed contents, we needs must put things together before we can use a science. It is therefore again an inevitable necessity, and no mere accident of personality, which induces the professors of experimental pedagogy to bind up, or try to bind up, the *disjecta membra* of experimental psychology into useful bundles. In carrying the bundles about they will assuredly lose a stick here and there, and some of the sticks will get into the wrong bundles; but the things simply can't be carried at all unless they are bound up somehow, and if they are left grounded where they lie they will be of no human service. It was, therefore, quite to be expected that Professor Meumann, the head and front of the offending, should be severely criticized by Professor Wundt for what he regards as the reintroduction of the faculty doctrine in psychology.

I hold no brief for the defense of the faculty doctrine, and I am against most of the educational inferences which have been drawn from it. But to overstate the case against it will produce a violent reaction when it is discovered that carefully conducted experiment may lead to a justification of some form of it—a form and a justification which will not sanction the errors of medieval pedagogy, but will give us hope that our mental training is not quite such an atomistic affair as the extremists of the opposite school assert. It is perhaps a little unwise, and I am not sure that it is not a little too early, to attempt a mediated view—we are not yet ripe for the synthesis of these contradictions. In attempting such a task, one has merely the doubtful consolation of knowing that one is likely to be criticized by both parties, and alas! one has no partisans.

II. The Faculty Doctrine and Education

Probably no problem in educational psychology calls to-day more urgently for continuous and exact treatment than the relation between the various mental powers of school children.

I have used the word "powers" because I wished to avoid declaring, or rather, insinuating, any opinion at present as to what is known in psychology as the "faculty doctrine." Much more patient experimental work remains to be done before we shall be entitled to pronounce any confident opinion on all the problems—for they form a group rather than a single problem—which are raised in the attack and defense of this doctrine of the faculties.

This is not the place for any extended discussion of the various

psychological forms of the doctrine; indeed, some of the leading theorists of to-day are apt to regard the discussion as closed. But we can at once dismiss one aspect of the faculty theory, namely, that which explained our memories and our imaginings by postulating as causes a kind of separate mental organ or agency called *the* memory, and another called *the* imagination. Our philosophy of explanation has grown less naïve than it was when such postulations satisfied us.

But there is another aspect of the faculty doctrine which can not be dismissed in such a cursory way. According to that, a man with a good memory is a man who can remember, though, doubtless, with variations due to his greater or lesser interests in particular subjects, pretty much and pretty well anything he wants to; he can learn poetry, he can learn mathematical formulæ, he can learn dates in history, he can learn geography—he can remember both text and maps, and he can learn tunes (some of the defenders of the doctrine would feel a little hesitation on this count), and he can remember them all. If he is an imaginative person he can produce from among the things he knows new things which are psychologically original, that is, original from the standpoint of psychology, the individual standpoint. He may have learned stories, but he can write others which are in no sense mere repetitions of what he has learned; he may have learned to draw and remember the appearances of objects, but, as an imaginative draughtsman, he passes beyond what he has seen and learned. Indeed the ultra supporters of the faculty doctrine would maintain that he would invent better if he had not learned or could not learn to draw and remember actual objects. In mathematics such an one will tend to invent his own formulæ, in science he will frame his own hypotheses, and in music will make tunes for himself: all of which, *bien entendu,* need not be original except in the psychologic sense. Now it is fairly obvious here that we are dealing not with a single problem, but with a whole group of problems, and perhaps that consideration may appear more clearly and usefully to the student of educational psychology if I approach the questions from the educational side.

III. Educational Theory and Mental Disunity

Educational anti-facultists of to-day express themselves in ways which assert or imply some or all of the following propositions:

1. That there is little positive correlation or connection between the various memories and imaginations and reasonings which, as a sort of general aggregate rather than as generalized functions, constitute *the* memory, or *the* imagination, or *the* reason.

2. That there is a negative correlation between these faculties.

Thus, persons who are endowed with good memories will tend to be weak imaginatively and *vice versa;* and the cultivation or exercise of one of these powers will affect the cultivation of the other adversely. I use the double expression, cultivation or exercise, because I do not for the moment wish to prejudge the question as to whether *the* memory or *the* imagination can be trained, in the scholastic sense, at all. Professor James, we may remember, denied altogether that one could train the mere brute retentiveness which underlies all forms of memory.

3. That, while admitting that particular memories and particular imaginations can be trained, it would be held that there is no transfer of the results of training from one memory to another or from one imagination to another. They are quite specialized functionally and, further, they are specialized by content.

As this is a JOURNAL OF PSYCHOLOGY, the genesis of these views may be worth a moment's consideration.

First of all, they are due to the backward pragmatic test of truth. There is general dissatisfaction with the educational results of to-day which is felt by all or almost all educationists. It is held, therefore, that the views on which these results are based can not be true, for our educational practises have proved unsuccessful. Hence, therefore, the contrary doctrines are supposed to be the true ones.

Secondly, there is an increasing recognition on the part of educationists that psychology has something vital to say about the mental basis of education. They know that the leading English-speaking theorists of to-day have, with little exception, decided against the faculty doctrine; and they take that decision to mean (as it does not necessarily) that the above propositions are direct consequences of its overthrow. And, apart from this, the growth of experimental methods has tended to make the merely educational mind, and, shall we say, some psychological minds, conclude straightway that not only is the old causal unity—the synthetic unity of apperception—dissolved into uncorrelated and separate faculties, but that even these faculties are also broken up into quite unrelated parts.

Memory itself, which had a long run as a separate homogeneous function, is dissolved into visual memories, auditory memories, articulatory memories, memories of motor sensations, and so on.

And from the fact that a person *may* be good at one and relatively weak in another mnemonic form, it has been concluded that there is nothing left at all homogeneous enough to be called *the* memory. There is less difficulty with *the* imagination; we have always spoken of an imaginative person, but we have not usually been so clear as we have been in the case of memory that an imagina-

tive person was good all round at all sorts of imaginings. The "image" doctrine of imagination currently accepted would tend to further accentuate belief in the separate nature of the functional operations commonly held together in a loose concept with the help of the word imagination. For how, it would be argued, should a training of visual images help us to form auditory ones?—and so on.

Issuing from all this logically, though genetically, I believe, only appealing to it for support, is the enormous trend in favor of practical education, the decline of the classics, and some others of those movements one knows as modernism in education. For, if these propositions be true, we can educate a child in particular functions only: if we want him to grow up with powers of imagination we must make most, if not all, of our school exercises of an imaginative kind: memorizing will be obstructive or at best nugatory, and reasoning will not help us. Or if we want him to learn from the work of others to become adapted to his environment, to frame his inner relations in accordance with outer ones, we must set him to observe and remember; imagination with such ideals being reduced in name and fact to phantasm or fancy. Indeed, the educationist often goes further, as logically he ought to do, on these premises. Not only is the cultivation of the separate faculties, *e. g.*, memory and imagination, believed to take place without interpretation and even with adverse influences one on the other, but the separate memories and the separate imaginations must, if we require to improve them, be cultivated in the form in which they are hereafter to be exercised; for there is little or no transfer of improvement gained in one particular function to any other whatever, even to those which, according to the older faculty psychology, were regarded as practically identical with it, and were called by the same name. How *can*, one would say, the memory for dates help the memory for chemical formulæ, the memory for pictures help the memory for tunes, or how should practise in imagining interesting stories help a child to imagine new designs in draughtsmanship? I admit the extreme difficulty in answering these questions satisfactorily, even if experiment should show that one function does help the other.

The general line of argument is further supported by well-known facts drawn from adult psychology. Jones is a highly imaginative person; his reasoning we believe weak—his conclusions do not agree with our own; and he does not know the facts we appeal to; we shrewdly suspect his memory to be faulty. Brown, on the other hand, reasons beautifully; but he never remembers facts and has no imagination. Robinson is full of facts, but he is a stodgy person who can not reason on them nor throw them into combinations different from those in which they were originally experienced by him.

And we do not wonder at these things; for Jones is an artist, Brown was educated in logic and metaphysics, and Robinson is the unfortunate product of an encyclopedic curriculum punctuated plentifully with examinations.

These are people who, if they were arranged in the order of their proficiency in mental powers, would be placed very differently according as we choose memory, imagination, or reasoning as the basis of our differentiation. Robinson, for example, would stand 1st for memory and *n*th for reasoning or imagination, at least so common sense supposes.

Nor is it merely a common sense opinion unsupported by philosophers and psychologists. We may remember Sir William Hamilton's essay on the study of mathematics as an exercise of the mind, and Herbert Spencer's appraisement of mathematicians balanced by his estimation of the defective reasonings of men of science. They are supposed to be exclusively devoted to particular types of reasoning and hence to be unable to reason in any other way. Their faculty of reasoning is not only no faculty at all, but is divided against itself in such a way that the cultivation of part of it militates against the operation of the other part. I append the following quotation to show that I have not strained the argument involved in Spencer's essay.

> This instancing of five men, occupied with mathematics and mathematical physics, in whose minds the formula of Evolution raised no answering conception, may be thought to imply an undervaluation, if not even a reprobation, of mathematics and physics as subjects of study. No inference could be more erroneous. To guard against it, however, let me point out that while exclusive devotion to the exact sciences produces certain defects of thought, exclusive devotion to the inexact sciences produces defects of thought of an opposite kind. These last present phenomena under such complex forms, with interdependencies so involved, that necessities of relation can not in most cases be said to exist; and the many causes simultaneously in operation so obscure the action of any one, as in large measure to exclude the idea of definite causation. Among plants a few fundamental relations may be fairly alleged, as between the monocotyledonous germination and the endogenous mode of growth, or between the dicotyledonous germination and the exogenous mode of growth. But relations among multitudinous combined traits, such as kind of fructification and possession of thorns, or hard-shelled nuts and shapes of leaves, can not be shown to have any causal characters. So with animals. Though it is a trait of creatures having mammæ to have seven cervical vertebræ, yet for this correlation of structures no necessity can be alleged; as is proved by the fact that though at one time the connection was supposed to be universal, there have of late years been discovered mammals having eight vertebræ in the neck. Hence, those who exclusively study animals and plants, being perpetually impressed by connections of facts which are either fortuitous or for which no reason can be assigned, are not daily habituated to the perception of causal relations, and such generalizations as they can establish come to be regarded as empirical. A purely inductive habit is encouraged and a deductive habit discouraged. The resulting mental tendencies operate

in other regions of thought, so that everywhere necessity of relation is doubted, and the idea of inevitable consequence meets with no acceptance. Many times in a distinguished biologist I have observed the effect thus described. Present him with a great accumulation of evidence supporting a certain conclusion, and this conclusion, coming before him under the form of an induction, he would entertain and seem ready to accept. After a time point out that this conclusion might be reached deductively from known necessary truths, and immediately his scepticism was aroused. Forgetting the inductive basis originally assigned, the deductive proof excited such repugnance as tended to make him reject what he before admitted. The habit of mind encouraged by dealing exclusively with empirical generalizations produced an abnormal distrust of all others.

As I intend, finally, to deny the validity of educational arguments drawn from such evidence, I ought to say at once that such a method is inevitable at a certain stage in educational theory, and that it is the first and obvious way of attack may be shown by listening to any conversation among scientific men when they are "off" their own particular line. Bearing in mind the evils as well as the good which we believe to be derived from each study in its highly specialized form, we have forthwith agreed that a modicum of the same studies will, in youths and children, produce similar effects, though proportionately smaller, of course. Hence we ought to teach that, and should not teach this, and so on. A first-rate mathematician is said to be weak in adding up sums; hence accuracy is not necessary for school children, they can become great mathematicians without it. A great literary man had a poor memory, and was not always sure of his spelling; so that good spelling need not be insisted on in school, even for subsequent success in literature. A great scientist used few books, he owed his knowledge to first-hand perception without guidance from others. Now perception is a separate faculty, called by pedagogues the faculty of observation; hence we must, in order to produce scientists, confine the youthful mind to nature study of a direct kind. These arguments are everywhere current among educationists either explicitly or implicitly. Shall we cease to argue thus? By no means; we must and ought to argue from the cases we know. But we ought to know more cases. We must admit that such persons exist; but before drawing conclusions from their psychology to ordinary educational practise, we must ask, Are they normal adults?

Can we best find psychological direction in the study of abnormal cases, whether they be found amongst men of genius or in lunatic asylums? It is known to be extremely dangerous to make general inferences from the extreme ends of any psychological scale; some of our best attested correlations give way at the edges. Even in so simple a matter as the relation between temperature and volume of water, we should be deceived if we trusted to a kind of rule-of-three

conclusion. For we find by experience that there is a peculiar break at 4° Centigrade: after continuously shrinking with falling temperature, the liquid at this point begins to expand. The relationships between our various mental powers are, doubtless, at least as complex as that between the temperature and volume of water. Indeed, we need not argue by analogy that they are so. It is well known among those who work much in the correlation of mental functions that, towards the limits of the series, the correlations may be even reversed, and mathematicians caution us against attaching too much importance to the cases on the edges of series; it is, in fact, a complaint against the world-known Pearson formula of correlation that it allows too much weight to the extremities of the series correlated.

It is obvious that, until we have established correlations and connections all along the scale, which are *generally* true, we can draw no valuable conclusions for practise of any kind. This work is, fortunately, in process of being done. Our every-day outlook is always towards limiting cases, because these are striking and noticeable. That they were also misleading we scarcely began to suspect before experimental psychology began its investigations on adult professors and students who were accessible to laboratories.

But may we then draw inferences which shall be valuable in ordinary pedagogy? No, not even then; for children are not adults; they are not even miniature editions of adults. They differ in ways which are vital for educational theory and practise. If the above line of argument is sound, it conducts us directly to observations on normal children as the only way of obtaining real guidance for pedagogy.

IV. Educational Theory and Mental Unity

But pedagogy, like more established sciences, and especially like those which oscillate between a normative and normal condition, is by no means a solid body of consistent doctrine.

The views of the school to which I have hitherto referred all tended in the direction of reducing our belief in the unity of mind: its members disbelieve in the faculty doctrine because they do not believe that the processes referred to generically as those of one faculty are, as a matter of fact, in direct positive correlation and connection with each other; they accept the faculty doctrine in so far as they maintain that the improvement due to the exercise of one faculty is not transferred to work undertaken by another. In so far as the faculty doctrine is a doctrine of separation, they subscribe to it; in so far as it is a doctrine of unity and combination, they deny it. But the doctrine is attacked, not only because it is considered to

regard the mind as too much of a unity, it is attacked by another school because it ascribes too little unity to the mind. This school holds that the various mental powers are of course highly correlated, so highly that it is absurd to talk of disparate powers or faculties at all; the work of finding correlations between mental powers seems to them a *πάρεργον*. I merely mention *en passant* those who believe that mental life can be quite adequately pictured as the synthesizing activity of a unitary soul or subject, since this view is not active today as a basis of psychological investigation, however stoutly it may hold its own in the metaphysical field. There is probably a truth underlying the view which few psychologists of sensation have yet allowed for, namely, the necessary and inevitable participation of the subject or reagent or agent, as I should prefer to call it, in every fact of knowledge.

But this participation can be shown only by doing, and by doing definite and conceivable things. These activities are many and multiform, it is said, and rightly so. But it is further implied that they may all be summed up in a few fundamental categories, to wit, discrimination, comparison, association. These, *bien entendu*, are not new faculties, they are elementary processes or principles of processes which can be, and are, employed in the operation of the various so-called faculties, perception, memory, imagination, reasoning, etc., and, moreover, can be, and are, employed in various fields of knowledge. If well employed in an imaginative field, they will result in fertile imagination; in a mnemonic field, they will result in accurate and permanent memory. Consequently, if we set the same individual various tasks involving processes of memory or imagination, he will, as compared with other people (my reader will remember the fertile methods of correlation by rank) tend to do about equally well in these different tasks. Why? Not because his memory and imagination are the same thing exactly, but merely because he applies, or may apply, his discriminative, comparative, and associative powers equally in all these cases.

So that the labors of experimental inquiry are undertaken in vain, the correlation found *must* be high. If one points to the well-known cases, above cited, of Jones, Brown, and Robinson, one is fairly answered that the doctrine does not require that each person shall, as a fact, be equally strong in memory, imagination, etc., but only on condition that he had applied his powers of discrimination, comparison, etc., equally; that is, had given equal attention to mnemonic and imaginative subjects. Logically, one sees that imperfections would tend to be thrown on *the* attention, and a perusal of experimental work tends to show that this has, in some cases, actually occurred.

Opponents urge that the power to attend to any one set of mental processes, at least continuously, must depend upon large native endowment for that particular function. The education of the attention is ruled out as the only factor of difference, since the power to attend to different processes differs initially, that is, before a process of training has come in. It is a difficult position, since we have no exact methods of separating the attention factor in the result from the factor due to the natural endowment for the work in question. For example, one boy does arithmetic well with little attention; another may attend carefully, and fail. "Yes, we know that," we may answer, "but we can get over that difficulty by comparing the work of the same boy only with his own work of the same kind and difficulty done at different times. The difference will give an indication of the waxing and waning of attention." "No," it is answered, "the power to perform the process varies, quite apart from the attention given to it; it waxes and wanes from various causes other than the failure of attention, from lack of nutrition, from practise, from fatigue, and so on." Extremists go further, and imply that attention to any process is simply an indication of the ripeness and fulness, so to speak, of the organs or other parts, neurological or otherwise, which are physiologically involved. There is much to be said for this view, were we considering *spontaneous* attention merely; but common experience uses the term attention to denote those cases in which, notwithstanding our known weakness, our felt fatigue, we force ourselves to attend, as the phrase goes; and we believe that we can thereby raise the results of work which is issuing from a rather used-up power. Of course, it is not pretended that attention can increase the work from an organ quite fatigued; indeed, it seems to me that, theoretically, we might define fatigue as indicated by a falling-off in the power to perform some process which additional activity of attention could not prevent. Practically, with the exception of those who believe they are measuring differences in the power of attention by means of experiments which actually measure work done, what actually happens among good experimenters is something like this: Every precaution is taken to secure all the possible attention of which each subject is capable on every occasion on which the tests are made. We say frankly when we are dissatisfied with the attentiveness of an observer—we often are when his results are jerky—so we speak out so as not to mislead our readers and, incidentally perhaps, to preserve the conclusiveness of our own results. So that the theoretical test I propose is one already implicit in good practise. I have ventured apparently off the track, but the discussion is necessary to justify procedure in which tests are made of mental functions, for otherwise it might be alleged that one is measuring merely

different states of attentiveness of the same subject, and nothing else.

Much of the above argument seems abstract and metaphysical, and some would think it absurd to suppose that practical or even theoretical pedagogy has been much influenced by considerations of the unity of mind. To instance Herbart would only be to mention a case in which the same man's pedagogy and metaphysics were far asunder. For whilst he postulated a unitary soul or subject, he gave most admirable instructions pedagogically as to the way in which to produce a unified mind which, *ex hypothesi,* he started from as an original possession. But there is a school of educationists who do believe in unity; they assert that the results of the faculty doctrine are pernicious, and that, *a fortiori,* the views of those who think that the faculty doctrine itself implies too much coherence in mental life are more pernicious.

The training of the faculties—a *façon de parler* beloved of pedagogy—is for them a myth. The whole mind hangs together. (Some of us wish it would hang together for the space of one article; our own minds, do I mean? Yes, and those of our readers?) Practise in any mental function means for them improvement all round, if it means improvement at all. Consequently, all pedagogical exhortation which recommended this or that particular study as specially suitable for improving some particular mental power, *e. g.,* that to train a boy's reasoning powers (the faculty doctrine calls it *the* reason) we must teach him arithmetic, or demonstrative geometry, or grammar, is thereby at once placed out of court.

If the whole mind is the unity which these thinkers profess it to be, mental pabulum is useful for its general effect rather than for its special value in training special powers. The apostles of the training theory are easily ridiculed when, in answer to the charge, for example, that the public school boy never really learns to know Latin or Greek, they point out the magnificent effects which these studies have as mental discipline. *Les extrêmes se touchent.* The believers in the complete unity or in the extreme disunity of mental functions meet on common ground. The matter of education becomes everything, the method nothing. If we can not develop mental powers and transfer the effect from one subject of instruction to another, we must aim obviously, as far as we can, at giving instruction in the very knowledge, and practise in the very activities, which the adult will probably want to know and do; we shall not teach him Latin verse to improve his taste for the English poets; we shall not teach him Euclid (pardon; demonstrative geometry, I mean) to help him to reason about the affairs of his business life; he must, in very truth, begin his life work young, and it is futile to suppose that, by any artificial arrangement of

knowledge specially prepared for school purposes, we can give a pupil a special dose of memory training, reasoning power, or fertility of imagination. All the training really possible or necessary will come incidentally in the acquisition of knowledge which is valuable for its informatory and not for its disciplinary effect. Pedagogical method *may* still be valuable, but it will be a method of presentation merely, not a method which puts practise and training before the acquisition of fact.

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RHYTHM AND THE SPECIOUS PRESENT[1]

A SATISFACTORY working hypothesis for the study of rhythm-perception has not yet been formulated, although several writers have come very close to the statement of the theory which seems to me adequate. That there is need of a new hypothesis is evident to any one who takes the trouble to go over the experimental literature dating from Bolton's paper.[2] The impression which one gets from this literature is that the psychologists are well aware that rhythm-perception presents a big problem, but are at sea as to the steps to be taken towards the solution thereof. An interesting light is thrown on this situation by the case of a German writer who is much quoted on the subject of rhythm-perception, and whose article of over a hundred pages was presumably preliminary to an account of extensive experiments of his own. The "Fortsetzung folgt" which concludes his second instalment remains an unkept promise, and there are certain things which indicate that he was unable to handle the experimental problems, that the undertaking was too much for him.

Introspective work has convinced me that the perception of a rhythmic grouping or series is conditioned by a periodic change in the specious present. When a series of stimulations (auditory, for example) runs off without any decided rhythm or grouping, the specious present maintains an approximately fixed length, or, at least, the variations in its length have no functional relation to the series of stimulations in question. Sensations appear serially, remain for a greater or less time in "present" consciousness, and fade out one by one. When the sensations begin to group rhyth-

[1] Presented, in part, at the Chattanooga meeting of the Southern Society for Philosophy and Psychology, December 28, 1910.

[2] "Rhythm," *American Journal of Psychology*, 1894, Vol. VI., pp. 145–238.

mically, either through the introduction of objective differences in intensity, duration, intervening period, or complexity, or through the factors which we for convenience designate as "subjective," the relation of the series to the specious present at once becomes definite.

If the sensations group by fours, forming what is called in the preferable terminology a "four-rhythm," the first member of each group, as it is roused, stands alone—alone, at least, in so far as the other members of the series are concerned. If the preceding sensations, belonging in other groups, are present at all, they are memory images: but it is highly probable that they are not present to consciousness even in that form. When the second sensation is aroused, the first is still present, not as a memory image, but as a sensation; present, that is, in the same way in which it was present when it first entered. The first, second, and third sensations are retained in the specious present until the fourth has arrived, and the four constituting the group are therefore actually sensed together. Immediately thereafter, the slate is cleared, as it were, for the next group. The specious present shrinks to such an extent that the sensations which a moment before were included in it are forced out.

There are numerous mechanical processes which might be used to illustrate this periodic elongation and contraction of the specious present. The action of a rosined violin bow on the string is such a process. However steadily the bow is drawn, the string is periodically drawn aside to the limit determined by the tension of the string and the friction, from which point it snaps back to begin the movement anew.

This specious present may be considered as being fixed at the "front" end, and as being stretched steadily backwards with the passing of time, until at the extreme point of stretch it contains that part of the time stream to which a group of the sensations corresponds; then it is released and snaps up to its original position, before the first member of the next group enters it.

The periodic change in the specious present is not essentially connected with variations in the degree of attention. Attention may be best at the beginning of the group, or at the end, or at some intermediate position, without affecting the essential features of the grouping.[3] The whole process may receive a high degree of attention, or a very low degree. But the specious present changes occur, or there is no rhythm. The attention-wave theory of rhythm-perception has no greater agreement with the facts than is to be found

[3] The experiments of Arps and Klemm, *Psychologische Studien*, 1908, Vol. IV., pp. 505–529, in theory bear on this point, but are too crude to furnish any data.

in its ascribing the grouping to some sort of periodicity in consciousness itself, rather than in the content!

The attention-wave theory is usually modified by a supplementary explanation in terms of synthetic activity of the mind.[4] For introspection, this is completely out of the question. The rhythm group is an immediate sensory fact, and depends on no higher synthesizing activity than does the fusion of two tonal elements.

We have no very reliable determinations of the series conditions which influence or determine the rhythmic groupings. Bolton thought that the most satisfactory duration for groups of twos, threes, fours, sixes, and eights was slightly over one second. An examination of his tables shows us that he has no evidence for this claim. He had no systematic procedure which would enable him to find what rates a subject would really prefer for a given group form, and, moreover, his results are obtained by averaging together a few determinations on several different subjects; a procedure which produces the most unreliable results. For example, the average rate of the three-groups for seven subjects was found to be 460 sigma, although only one of the subjects actually heard three-groups at the rates near that value.

For the influence of intensity-accents we have various agreements and disagreements of experimental results. It is certain that under proper conditions the accents may be heard at any position in the group; the group formed, that is, with the accented member occupying any position. What the "proper conditions" are, is a question; undoubtedly, the point at which the subject begins to hear the series is one of the influential factors, but the fact that subjective accents may be placed on practically any member of a group complicates the situation.

Several attempts have been made to show that there is a motor basis for rhythmic perception, but they can not be said to have had very important results. There is no doubt that periodic movement assists the formation of rhythmic groups in the content, but this fact has little bearing on the motor theories. The facts seem to be that all sorts of sensations lend themselves to serial grouping, and that if two series are practically coincident, they are grouped as one series. Hence, a series of auditory, visual, or tactual sensations which does not group easily alone, will group if combined with a strongly accented muscular series.

Stetson[5] has built up an ingenious but purely artificial motor theory of rhythm, based on the so-called "ballistic" movement:

[4] See Bolton, *op. cit.*, p. 220.

[5] *Psychological Review*, 1905, Vol. XII., pp. 250–270, 293–350.

a movement due to the alternate contractions of antagonistic muscular systems, the contraction of the first system serving as the stimulus for the contraction of the second, which checks the movement and returns the member to the original position. No other type of muscular action, according to Stetson, can serve as a basis for rhythm. As a matter of fact, rhythms beaten by lifting the hand or foot, letting the member fall each time by gravity, are just as "good" subjectively as rhythms beaten by "ballistic" movements.

The motor theories of rhythm-perception rest on no other bases than the facts that motor expression of certain sorts is good rhythmic material, and that periodic stimulation usually produces muscular activity. No one has been able to show that the motor factor is indispensable, and the introspective evidence is clearly on the other side. With the utmost possible relaxation of the entire body, good rhythmic grouping of an auditory series can be obtained. The grouping is easier and more definite with objective accent, but can be obtained when there is no objective accent, and no discoverable motor rhythm. The subject must, of course, lie flat on his back in this experiment. With perfect relaxation the grouping, if it occurs, is devoid of subjective accent, a fact which inclines us to the belief that subjective accent is essentially a motor affair.

While there is no absolute need of accent in a rhythmic series, accent makes the establishment of the groups easier, *i. e.*, it assists in the maintaining of a regular periodicity in the specious present. Naturally, the strongest accent comes at the beginning of the group, because the first member of the group has to be carried farthest, but the accent may occur in other positions, as we well know.

It is probably true that for the majority of persons, and in the majority of cases, the accents are preferred on the first members of the groups. This we might infer from the accent system which has developed in music. Another fact, which is sufficiently well established, and which also we would all probably be willing to admit without much proof, is that a long interval or pause introduced periodically in a series of sounds tends to throw the sounds into groups limited by these pauses. We must remember, however, that there are subjects who present consistent exceptions to this rule, and that any subject is apt to depart from the rule if some factor suggests another form of grouping. It is not highly probable that a quantitative method of research on rhythm perception can be established on the general validity of any such rule.[6]

Accent has a definite effect on the time-relations in a rhythmic

[6] See, however, Woodrow, "A Quantitative Study of Rhythm," *Archives of Psychology*, 1909, No. 14, and "The Rôle of Pitch in Rhythm," *Psychological Review*, 1911, Vol. XVIII., pp. 54–77.

series, but this effect is really of no importance for the explanation of the grouping. The general fact is that a small time-interval limited by two dissimilar sensations seems longer than the same objective interval under conditions practically the same except for the limiting sensations being similar. This was brought out very forcibly by the results of Meumann's experiments on time-perception,[7] although Meumann himself did not notice it, and supposed that there was no uniform result to his experiments. He, however, was expecting to find a specific effect of a weak sound or a strong sound on the interval following it, or preceding it, as frequently occurs in rhythmic series, and did not notice the effect of intensity-difference. In a rhythmic series, the effect of the accent is to lengthen the interval preceding it, or following it, according to which is compared with the other intervals.[8] This effect comes out in groupings of three or more; with two-groups we can not get at it definitely, for obvious reasons.

The general effect of stimulus difference on the estimation of small time-intervals has been brought out in a number of investigations,[9] but it has no bearing on the rhythm problems.

When the groups are small and the rate rapid, the contraction of the specious present does not occur at the end of every group, but at the end of every second, third, or even every fourth group. In this case there is a complex grouping; the unit groups are perceived as elements in a larger group, and accent is practically indispensable, for it is only by accent of some sort that the small groups can be set off from one another in the large group. Theoretically, a differential spacing should accomplish the same result, as, for example, when three-groups are given with relatively short intervals between the members of the group, and relatively long intervals between the groups. But practically, subjective accent enters in every such case, even when there is no objective accent.

With simple grouping, *i. e.*, where the periodic change of the specious present corresponds to the single groups, a longer interval between groups is more favorable to the contraction phase of the process; and hence the occurrence of a longer interval every second, third, or fourth interval may determine the grouping in twos, threes, or fours, if other conditions are not too strongly in favor of some other grouping. Here again we find there is no absolute need of

[7] "Beiträge zur Psychologie des Zeitsinnes," II., *Philosophische Studien*, 1894, Vol. IX., pp. 289–297.

[8] See Woodrow, *Archives of Psychology*, No. 14, pp. 8–9.

[9] See Schumann, *Zeitschrift für Psychologie*, 1893, Vol. IV., p. 67; Dunlap, *Harvard Psychological Studies*, 1903, Vol. I., p. 116; Miner, *Psychological Review Monographs*, 1903, Vol. V., pp. 68, 78–79.

this relation; the slate may be cleared in the shortest intervals of the series, if other conditions favor this sort of grouping.

The early members of a group are not present to consciousness as memory images when the last member occurs. It is experimentally easy to hold a memory image of a sound in consciousness until the sound is given again—if the sequence is fairly slow—but at the moment when the new sound occurs, the memory of the old disappears. It is practically impossible to have a sound-sensation and also simultaneously the memory-image of a sound of approximately the same quality. Moreover, the memory image held in the way described requires an appreciable time to arise, and is very decidedly not the sort of thing which is held in the rhythm series.

The physiological schematization of a sensation "present" to consciousness after its physiological process has practically disappeared is not easy. Nor can we simplify matters by assuming continuation of the brain processes. In that case the discreteness of the sensations would be lost. We must in any event construct our brain physiology to fit the psychological facts, and not *vice versa*. The specious present is a function of consciousness and not of the brain states. In the actual present moment—the mathematical present—the particular content of consciousness and the particular brain state *may* synchronize perfectly; we have, so far as I know, no evidence either for or against this assumption. But in the mathematical past, while the content may be speciously still "present," the brain state, which was never content of consciousness, is simply "past."

The function of the specious present in other matters than grouping of content factors may be very important. In comparison-judgments, for example, it is undoubtedly a matter of consequence if the compared contents are both held in the same present, or occupy different presents. The historic work on time perception, although it has not given us any very reliable data, suggests the idea that the varying relations of time-interval to specious present had a large share in determining the judgments.

The emotional effect of various degrees of extension or shortening of the normal present—if there is a normal present—offer a very attractive field for investigation. It does seem that a musical unit requiring a rather long or a rather short specious present for its apprehension produces a specific effect, or rather that in the emotional effects of compositions based on such units there are factors which depend on this feature. The difference between the music having a perceptual unit and the music having no such unit—no unit which may be apprehended in a specious present—is striking, and the average man requires considerable training in the hearing

of music of the latter kind before he will admit that it is music at all.

Among those who came near the statement of the above theory of rhythmic perception, I may mention the following. McDougal says: "The whole group of elements constituting the rhythmic unit is present to consciousness as a single experience; the first of its elements has never fallen out of consciousness before the final member appears, and the awareness of intensive differences and temporal segregation is as immediate a fact of sensory apprehension as is the perception of the musical qualities of the sounds themselves."[10] Yet in spite of this statement, McDougal went on to construct a motor theory of rhythm which directly contradicted it. Bolton says: "Does it not, then, seem reasonable, that during each wave or pulse of attention only one undivided state of consciousness can arise?" "The object of the state may be very complex, but it stands as a unit in consciousness."[11] Then he reverts to his attempt to interpret Wundt, and explains rhythm as a product of the "unifying activity of the mind," which attempts to "conceive a series of sounds in a simpler form."[12]

It is worthy of remark that Wundt, in the discussion of the span of consciousness with rhythmic impressions,[13] distinctly avoids bringing into the consideration the periodicity of consciousness or attention of which he makes much in other places. He does schematize the impressions as present simultaneously, but apparently figures them as fading out of consciousness in the same order as that in which they enter, not attempting to establish any connection between the rhythmic grouping and the simultaneous presentation. Again, he says, "Diese Entwicklung des rhythmischen Bewusstseins durchaus zusammenfällt mit der Entwicklung des Zeitbewusstseins selbst, so das unter allen Umständen der im Bewusstsein unmittelbar noch als ein einheitliches Ganzes aufgefasste Takt auch den Umfang einer noch unmittelbar, also simultan im Bewusstsein gegebenen Zeitvorstellung bezeichnet;"[14] avoiding, it seems, the simplest explanation of rhythm, in order to correlate it with time.

The chief recommendation which can be found for any theory in psychology is in its being a fertile source of experimental inquiries. That the theory I am advancing is very fertile will be demonstrated before long.

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[10] "The Structure of Simple Rhythm Forms," *Harvard Psychological Studies*, Vol. I., p. 322. Compare with the first sentence in the first paragraph on page 219.

[11] *Op. cit.*, p. 155.

[12] *Op. cit.*, p. 220.

[13] "Physiologische Psychologie," fifth edition, Vol. III., pp. 353–356.

[14] *Op. cit.*, Vol. III., p. 33.

MECHANISM AND VITALISM

THE recent work[1] of Driesch propounding a vitalistic theory has been the object of much discussion. While appreciation of the detailed analysis of those phenomena which are claimed to be peculiarly vitalistic has generally been expressed, criticism has been directed upon the fundamental contention and the argument upon which it is based. This contention is that certain phenomena of living nature are of such a character that a physicochemical explanation of them is inconceivable. Besides pointing out certain obvious inconsistencies in the presentation, the critics, as would naturally be expected, have in the main endeavored to establish the conceivability and even possibility of a physicochemical explanation of the processes in question, by pointing out their analogy to other mechanical facts, both of organic and of inorganic nature. Thus the biologist has been and will be incited to further analysis and more exact research in the field under investigation. To a lesser extent attention has been called to the vagueness and inadequacy of the notion of mechanism employed and to the nature of its implied contrast with vitalism. Now it may be that a keener appreciation of these notions will show that at the basis of the more apparent discrepancies lies a fundamental confusion in methodology. The attempt to carry over one kind of interpretation into a realm where it is inapplicable must entail disastrous effects; and the effort to harmonize the results thus caused may be a hidden source of the more obvious confusions. The consideration of mechanical or physicochemical explanation and, more specifically, the nature of its contrast with a vitalistic theory, will be the subject of this essay. If the result obtained should tend to point out the only consistent method of procedure in the biological field under discussion, it would assist in the removal of an obstacle to the proper direction of scientific effort.

Now it will serve our purpose to present very briefly the essence of the argument in favor of vitalism given in the work under consideration. It is maintained not only that there are certain processes in organic nature which are incapable of being resumed under physicochemical laws or described in terms of mechanics (for the present let us suppose these two predicates interchangeable), but also that any such aim involves a false ideal of science. One main support of this contention is based upon the phenomenon of restitutions. The complicated process of normal morphogenesis, although many of its manifestations call for the assertion of a different agency, may be conceived to have a machine as its basis. But the case of

[1] "The Science and Philosophy of the Organism."

restitutions, the production of a normal organism despite disturbances in the embryo or germ, is in its very nature a violation of a mechanical process. And for what reason? With the reply we approach what we regard as the logic of mechanical explanation. Mechanism involves the principle that similar effects must be produced by similar causes. In restitutions, however, different causes are observed to bring about the same results. A normal embryo produces a normal organism; an embryo altered in certain ways also produces a normal organism. Such a process is therefore essentially incomprehensible in physicochemical terms, and requires the positing of a factor of another order to explain its nature. (For the sake of simplicity we may disregard the positive content of this factor.) Obviously the force of this reasoning is dependent upon the meaning attached to the idea of cause. Now the only significance which the conception of cause, considered as the fundamental principle of physicochemism, may have, is that events must be conceived to be conditioned by certain other facts, or, more generally, there is a factor of determination in processes called mechanical. This is the hypothesis which is involved in mechanical explanation. But, it must be observed, such a conception of cause is not serviceable for concrete analysis. For here the specific facts in which the relation is supposed to inhere are themselves the object of investigation. Again, if we state the matter in another way and say that identity of antecedent and consequent is the underlying general principle, then it is the task of science to discover the particular occurrences to which this identity must pertain.

Has not Driesch been blind to the distinction between the general import of cause and the particular illustrative case? In the assertion that in restitutions there is a violation of the mechanical principle of causation there is the assumption that the only determining fact of a normal organism is a normal embryo. Therefore if a changed normal embryo results in a normal organism, we have an instance of the same effects following from different causes, and mechanism is not only inconceivable but contradicted. To this we object that the normal embryo may conceivably contain elements unessential to the production of a normal organism. It is towards the discovery of the essential factors or specific causes that the efforts of the critics are largely directed.

The only justification for designating a process as mechanically inconceivable is the characterization of it as essentially indeterminate. Such a description of the phenomena in question is not only without evidence, but is contradicted by the discovery of laws governing restitutions. For peculiar alterations of certain embryos are shown to result in specific organisms. These processes are found

to be calculable and must be denoted determinate. The function of investigation is to discover the particular factors which are the instruments in the determination. Through repeated experiment the laws governing restitutions have been formulated, and these laws assert the fact of physicochemical processes. We can and do predict the character of the changes in restitutions in the same sense in which we predict variations in normal morphogenesis. Normal morphogenesis and restitutions attest the fact that the accidental elements have not yet been distinguished from the essential, and thus the ultimately causal is yet to be sought.

The question whether bodies exist which are essentially indeterminate is a problem for solution. It may be a task of biology to locate just where, if at all, in the scale of life, an activity must be regarded as arbitrary. But the argument above, or any train of thought following a similar line, not only has not proved vitalism for the case in question, but has led to the conclusion that mechanical explanation is the only one to be consistently desired in the interest of science.

It must be noted further that observation of spatial processes can never give ground for the assertion that a portion of matter is essentially indeterminate or inconceivable mechanically. The most that can be affirmed on this score is that all attempts to comprehend the variations have failed. And, I take it, it is sympathy with this view that has led to the opinion that "the scientific analysis of psychic phenomena must be sought in physicochemical laws."[2] But such a theory, in addition to barring out the peculiarly psychic (if this term has a meaning which is not physiological), is not demanded by the logic of events. Its value for the biologist lies in its employment as a working hypothesis in investigations whose ideal is to approach the limit of mechanical activity in the organic world. It is not herein denied that from other sources there may come evidence which shall lead us to regard an activity as arbitrary.

And the existence of activities which can not be regarded as irresistible is in no way inconsistent with the tenets of mechanism or with the universality of its most general principle, the conservation of energy. For mechanism may be comprehended as applicable to a restricted sphere of nature in which the law of causation obtains. It is limited to that field in which determination is the fundamental postulate.

Now if we turn our attention to a search for the motive which has inspired the theory of vitalism, the following passages are suggestive: "Wherever there is life in the universe something happens which is not present in the given mechanical constellation as such. Some-

[2] Jacques Loeb, "Die Bedeutung der Tropismen für die Psychologie."

thing is introduced, not changing the quantitative side, but changing the actuality and direction of mechanical events." Again, "Though of course to deny the logical necessity of a vitalistic conception of biological facts does not imply the impossibility of vitalistic agents being actually at work in them." That is, if these two modes of description are applicable to the same process, it must be that different aspects of one process are denoted. Attention is directed to a quality of a mechanical process. Morphogenesis is a phenomenon which is physicochemically comprehensible, and this description of it does not rob it of such features as the greatness of its complexity and the fact that this complexity makes for the production of a being capable of entering into such relations with its environment as tend to maintain its existence. These characteristics mark its distinction from inorganic occurrences. The unity in the process, the relation of part and whole, does not make it more non-mechanical than many inorganic processes, and this so-called "regulative" feature has been discovered to be precisely the underlying assumption of mechanical explanation. In the phenomena of restitution, the still more apparent fact of adaptation dependent upon a greater degree of complexity has been the logical basis for designating the processes as essentially non-mechanical.

If the view just sketched be correct, then Driesch's main contention has been reduced to denoting the very different qualitative descriptions of certain physicochemical processes. The profitable contributions of the theory of vitalism are these: it has emphasized the peculiarity, in respect of their results, of specific physicochemical processes, and it has thereby directed attention to the significance of the physicochemical process itself. But the interpretation of such problems does not belong to the restricted sphere of biological explanation and, being confused with the narrower questions, has justly aroused vehement protest on the part of scientific investigators.

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REVIEWS AND ABSTRACTS OF LITERATURE

The World a Spiritual System. JAMES H. SNOWDEN. New York: The Macmillan Company. 1910. Pp. 310.

The present work is an outline of metaphysics avowedly for the uninitiated. Pervaded as it is with a genial dogmatism, confessedly loose in argument, and punctuated with citations from the poets, it would be easy for the professional philosopher (if such there be) to view it askance. The style is not only untechnical, it is often highly rhetorical and at times

edifying. Still, it is to be remembered that the author is writing for a presumably edifiable public, not for philosophers, who are past edification.

In view of the limits set by this sort of popularization, one is surprised that the author says so much that is worth while and with such fundamental sanity. The introductory portion of the book, dealing with the nature of metaphysics, is the most satisfactory. The crucial chapter is on "The Nature of Objective Reality," where the view is developed that, as the soul, which is reality itself, consists of "the self in its threefold nature of thought, sensibility, and will, and characterized by unity, growth, law, habit, freedom, and purpose": so "the fabric of the phenomenal world is woven of the same threads, . . . thus showing its ontological cause to be of the same piece with the ontological soul of man" (p. 177).

The idealism thus proclaimed is monistic, reminiscent chiefly of Berkeley and certain phases of Christian theology and calling to its aid Kant, Schopenhauer, Lotze, Bowne, Royce, and Ormond, to the last of whom the book is dedicated. The author best summarizes his view in these words: "God is the original, underived, infinite Spirit, and finite spirits are derived from and dependent upon him. The world is God's consciousness organized into a system of thought and sensibility and will. . . . Things are centers in the consciousness of God developing in increasing degrees towards selfhood. Animals are partial selves still included within the consciousness of God, but human spirits have reached selfhood and so have passed the point of detachment from the divine Mind into personality. . . . God's mind acts upon our minds so as to induce in us our sensations, which are developed and organized into our consciousness of the world, the human body being the special point of contact and means of intermediation between the divine Mind and human minds" (p. 223).

It would be unfair to criticize the present work as one would a treatise meant to be technically exact. The function of the critic is to ask whether the book fulfils its aim and whether that aim is a good one for metaphysics. Now, the progress of metaphysics can perhaps be furthered by inducing an increasing number to become interested in the solving of its problems. Perhaps there are sound reasons for the popularizing of philosophy. The philosophers are recruited from the masses and presumably the masses need philosophy. But is there not a degree beyond which popularization should not go, in the interests of both the public and philosophy? The *spirit* of philosophy at least should be imparted and, in the interests of that spirit, careful definition of problems and exactness of argument should not be sacrificed to rhetoric. To be sure, one will lose some of his public if he is too particular, but it is better to lose some of the public for the sake of philosophy than to lose philosophy for the sake of the public. The present work, in spite of obvious virtues, is somewhat too dogmatic, somewhat too loose in logic, and entirely too eloquent in style to introduce the public best to the meaning of metaphysics in general and of idealism in particular. Dogmatically (for instance) the author assumes his crucial position that the

self knows itself immediately as noumenal or "ontological" reality. The reader is allowed to depend upon rather loose logic when he is told that because the world is intelligible and beautiful and active it is the product of intelligence, feeling, and will. (Possibly some one even of the uninitiated may pause to remark that of course whatever an intelligence can know is intelligible, but that this leaves the noumenal question still open.) Again, a philosophic style, even a popular one, is not best exemplified by describing metaphysics as "closest to the sun of truth and the stars of eternity," nor in the persistent use of the language of faculty psychology. Nor should the public be led to suppose that the rubric "modern idealism" signifies only the unique sort of idealism suggested in the present volume (p. 216). In this connection it is pertinent to note that the author takes no account whatever of the modern pluralistic idealists.

The book ought to be especially welcome to religious readers as such. Not only is its phraseology reminiscent of the enlightened pulpit, but Biblical quotations are plentiful and all the familiar dogmas of Christianity—inspiration, prayer, the trinity, the incarnation, the atonement, and miracles—are put upon the author's idealistic basis. The book would serve as an agreeable introduction to philosophy in such sectarian colleges as would welcome a metaphysics of the faith.

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The Precinct of Religion in the Culture of Humanity. CHARLES GRAY SHAW. Swan, Sonnenschein & Co. 1908. Pp. xiii + 279.

The aim of the author is to show that religion has an independent province in human life. Of the method by which he undertakes to do this he says in the preface: "The spirit in which the precinct of religion has been examined is not that of the older noumenalism, still less that of the newer phenomenalism; both metaphysics and psychology are here set aside for the sake of a humanism which seems best adapted to defining the essence of human worship." Just what this humanism is, however, a perusal of the book does not enable one to ascertain.

The author deems that, this being the "age of culture," it is possible to do better justice to religion now than it was during the enlightenment, when the dominant conception was that of "rights." He considers religion to be the religious consciousness, and holds that its nature is primarily *the affirmation of the soul* and the negation of the world. Ultimately, however, religion leads to the recognition of a world-soul and to entrance into a spiritual world-order. It is religion that gives us the three all-important ideas of the personal soul, the unity of the world, and the absoluteness of the world-soul.

The insistence upon the independence of religion leaves rather unclear in what positive relation the author believes it to stand to the other branches of human culture. But we are told that without the philosophy of religion the theory of knowledge would never have arisen, that religion has a close affinity with esthetics, and that it shows the true value of morality.

As to the truth of religion, the author rejects the idea of a demonstrable theism, and declares the difficulty in the past to have been that theism never has been put on the basis of religion. "St. Francis with his holy love is more of an argument for God than Anselm with his ontological proof." The real proof of religion is ethical in its nature, and is to be drawn primarily from the exalted types of the religious life.

The material furnished by the comparative study of religion has been drawn upon to a certain extent, but only in a scattering way. The author appears to hold that Christianity should be allowed to exercise a formative influence upon the modern world-view, but he has done far too little by way of supporting such a thesis.

The important positions taken in this book might have been given considerably greater clearness and force by a better ordering of the material as a whole, by a more consistent and vigorous criticism of views opposed to those of the author, and by more real, consecutive reasoning in support of the views adopted.

The style of the book reveals a fondness for neologisms on the part of the writer, and on the whole it must be said to lack lucidity, though occasionally a gift for terse and epigrammatic statement is apparent.

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La conscience de devoir dans l'introspection provoquée. PIERRE BOVET. *Archives de psychologie,* 1910, Vol. IX., pp. 303–369.

In the five hundred introspections gathered for an earlier study in which the author repeated the experiments of Messer and Bühler on judgment and ideation, appeared a great many references to feelings and in particular to the feeling of oughtness. The present monograph is a detailed study of this feeling, and of feelings related to it, as far as they appear in the said introspections. It is offered as preliminary to a forthcoming study of the moral sentiments.

The chief topics with which the essay deals are:

The directions given to the subject (*la consigne*) considered from the point of view of the experimenter and from that of the subject; the instructions considered as a mental state, as conscious, as unconscious, etc.

The varieties of the sense of oughtness (*sense de devoir*) under three heads: past, present, future.

The affective coefficients of the sense of oughtness: the feelings present during the period of expectancy of the directions and during their apperception; during the periods of choice (when a choice is the task set), of search for the answer, of the discovery of the answer, and, finally, the feelings accompanying the giving of the answer.

In a concluding chapter, states nearly related to the consciousness of oughtness are analyzed and compared with each other and with the feeling of oughtness, namely, the feelings of *vouloir, pouvoir,* and *avoir le droit.*

Even though, in this study, problems are set rather than solved, the author deserves congratulation for having replaced the ordinary method

of the student of ethics—casual self-introspection and observation—by the analysis of a large number of introspections produced under determinate circumstances.

The great number of divisions and subdivisions, at times minute and subtle, and the remoteness of several of them from what seem material issues, may perplex and weary the reader. Yet, if he reads carefully enough, he also will become aware of that which forcibly impressed the author, *i. e.*, that "there is hardly anything in the mind of the subject anxious to perform the assigned task which has not its exact counterpart in the mind of a person in the presence of precepts having for him moral significance." Professor Bovet has certainly cleared much of the ground surrounding one of the fundamental problems of the psychology of ethics.

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JOURNALS AND NEW BOOKS

REVUE NEO-SCOLASTIQUE DE PHILOSOPHIE. February, 1911. *Le concept de loi dans les régularités statistiques* (pp. 5–27): J. LOTTIN. – Statistical regularity allows us at most to conclude the existence of common causes; and the principle of determinism allows us to infer the existence of a necessary connection between these causes and their effects. The most important thing to know, however, is the nature of this connection, which is without the field of statistics. *William James* (pp. 28–57): L. NOËL. – A critical exposition of the philosophy of the celebrated American thinker. *La crise du transformisme* (pp. 58–89): HECTOR LEBRUN. – There is no crisis of true evolutionism. But some laws closely connected with the theory of evolution are now rejected because they are devoid of scientific foundation. Such are Darwin's natural selection and Haeckel's famous biogenetic law. *Faculté du divin ou faculté de l'être* (pp. 90–100): A. GARDEIL, O.P. – Observations on a note of Rousselot's article entitled: "Métaphysique thomiste et critique de la connaissance." *Deux guides dans l'étude du Thomisme* (pp. 100–107): M. BALTHASAR. – Excellent guides in the study of Thomism are Sertillanges's "Saint Thomas d'Aquin" and Garrigou-Lagrange's "Le sens commun." *Le mouvement néo-scolastique* (pp. 107–115): L. NOËL. – A review of the neo-scholastic movement in Europe during the last years. *Bulletin de philosophie sociale* (pp. 116–137): M. DEFOURNY. – A study of the recent contributions to sociology. *Comptes rendus:* Joseph Mausbach, *Die Ethik des hl. Augustinus:* M. DE WULF. *Spinoza's Short Treatise on God, Man and Human Welfare,* translated by L. G. Robinson: A. W. CENTNER. L. P. Jacks, *The Alchemy of Thought:* E. B. BARRETT. A. Joussain, *Romantisme et religion:* G. WALLERAND. F. B. Severac, *Vladimir Soloviev:* C. MICHALSKI. J. Donat, S.J., *Summa Philosophiæ Christianæ:* G. WALLERAND. Fr. Gabryl, *Filozofia przyrody:* C. MICHALSKI. F. Gillet, *L'éducation du cœur:* L. NOËL. E. Seillière, *La philosophie de l'impérialisme:* JEAN NEVEN. *Correspondance de Renouvier et de Sec-*

rétan: NATALIS. J. T. Beysens, *Natuurphilosophie of Cosmologie:* L. DECKERS. E. Peillaube, *Les images:* E. BLAMPAIN. E. von Cyon, *Eduard Pflüger. Ein Nachruf:* R. F. A. Meyer, *Etude critique sur les relations d'Erasme et de Luther:* ELNO. *Chronique philosophique. Sommaire idéologique des ouvrages et revues de philosophie.*

THE PHILOSOPHICAL REVIEW. January, 1911. *The Philosophy of William James* (pp. 1–29): RALPH BARTON PERRY. – A classification and exposition of the doctrines contained in the philosophy of Professor James. The writings of Professor James treat of three great topics, "the nature of the human mind, the structure and criteria of knowledge, and the grounds of religious belief." An account is given of each of these topics. *Society and State* (pp. 30–45): R. M. MACIVER. – A criticism of modern political principles, maintaining that "they are vitiated by a too narrow Hellenism." The doctrines of Rousseau, Hegel, and Professor Bosanquet are examined and found to contain the Hellenic fallacy of identifying state and society. It is maintained that the two should be positively distinguished. *The Philosophy of Henri Bergson, II.* (pp. 46–58): G. N. DOLSON. – A critical evaluation of the philosophy of Bergson, reducing the difficulties "to three main problems, namely: (1) intelligence and instinct, (2) time and space, and (3) matter and perception." The three problems are critically examined. *Discussions: The Nature of Truth: A Reply* (pp. 59–63): JOHN E. BOODIN. *Rejoinder* (pp. 63–66): RADOSLAV A. TSANOFF. *Reviews of Books* (pp. 67–86). W. B. Pillsbury, *The Psychology of Reasoning:* ELLEN BLISS TALBOT. Charles Werner, *Aristotle et l'idéalisme platonicien:* J. A. LEIGHTON. Josiah Royce, *Race Questions and Other American Problems:* C. A. BENNETT. Wilhelm Koppelmann, *Die Ethik Kants:* FRANK THILLY. Ray Madding McConnell, *The Duty of Altruism:* FRANK CHAPMAN SHARP. *Notices of New Books. Summaries of Articles. Notes.*

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NOTES AND NEWS

THE following changes take place in the department of philosophy in the University of Michigan: Professor Alfred H. Lloyd has leave of absence for the year 1911–12. During his absence Charles Milton Perry, Ph.D. (Mich.), joins the staff as instructor in philosophy. Dr. John F. Shepard, instructor in psychology, has been advanced to an assistant professorship. An additional instructorship in psychology has been created. It will be filled by Henry Foster Adams, Ph.D. (Chicago). Harry Wolven Crane, A.B. (Mich.), at present assistant in psychology, has been elected to the George S. Morris memorial fellowship for the year 1911–12.

AN International Congress of Monists will be held at Hamburg, September 8–11, 1911, with Professor Ernst Haeckel as honorary president, and with the participation of Professor Sv. Arrhenius, of Stockholm, Professor Fr. Jodl, of Vienna, Professor J. Loeb, of New York, and Professor W. Ostwald, of Leipzig.

THE Kantgesellschaft invites competitive essays on the subject "The Progress in German Metaphysics from Hegel to Hobart." There are two prizes, one for 1,500 marks and one for 1,000 marks. Papers should be addressed to Dr. Liebert, Berlin, W. 15, Fasenenstrasse 48.

THE death is reported from Padua of Dr. Francesco Bonatelli, Professor of Theoretic Philosophy at the University of that town, and for some time co-editor with Professor Mariani of the paper *La filosofia delle scuole italiane.*

AUGUSTE COMTE'S "Early Essays on Social Philosophy," translated by H. D. Hutton, are included in Routledge's New Universal Library (Dutton). Frederic Harrison supplies an introduction and notes.